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ALEXANDER L. STEVAK

**No.**

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# **In the Supreme Court**

IN THE

**United States**

OCTOBER TERM, 1982

RICHARD LEE BROWNE, deceased, et al.,

*Petitioners,*

vs.

MCDONNELL DOUGLAS CORPORATION,

*Respondents.*

On Writ of Certiorari to The United States  
Court of Appeals For The Ninth Circuit

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**PETITION FOR WRIT OF CERTIORARI**

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(i)

### **QUESTIONS PRESENTED**

(1) Whether, in a diversity action, the federal rule for the sufficiency of evidence to support a jury verdict on the issue of proximate cause can be applied in a strict products liability action to defeat substantive state policy.

(2) Whether application of the federal rule for the sufficiency of evidence to support a jury verdict on the issue of proximate cause has deprived the petitioners of their guaranteed right to a trial by jury?

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OF THE

## United States

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OCTOBER TERM, 1982

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RICHARD LEE BROWNE, deceased, et al.,

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VS.

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*Respondents.*

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### PETITION FOR WRIT OF CERTIORARI

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#### OPINIONS BELOW

The Judgment of the Court of Appeals appears in Appendix A. The Order denying the Petition for Rehearing appears in Appendix B. The per curiam opinion of the Court of Appeals appears in Appendix C. The Judgment of Dismissal by the District Court appears in Appendix D. The Reporter's Transcript of the District Court's reasons for dismissal appears in Appendix E.

#### JURISDICTION

The Judgment of the Court of Appeals was entered on November 17, 1982. The Petition for Rehearing was denied on December 20, 1982. This petition was timely filed within ninety days of that date. This Court's jurisdiction is invoked under 28 U.S.C. 1254(1).

## STATEMENT

The petitioners are relatives and heirs of 36 decedents who were killed on September 10, 1976, in a midair collision between a DC-9 commercial jet airliner and a Trident 3 commercial jet airliner. The collision occurred in the late morning at an altitude of approximately 33,000 feet. The weather at the time and place of the collision was clear. All passengers and crewmembers on board both airliners were killed.

The petitioners sued the McDonnell Douglas Corporation (respondent) as the designer and manufacturer of the DC-9 airliner. They alleged strict liability in tort and negligence in the design of the DC-9. They sought to prove that a defectively designed windshield post impaired visibility and prevented the captain of the DC-9 from seeing the other airliner in time to avoid it. They offered evidence of three other DC-9 midair collisions, but that evidence was excluded.<sup>1</sup> At the close of their evidence, the District Court directed a verdict for the respondent on the grounds that evidence sufficient to support a jury verdict on the issue of proximate cause to the jury had not been presented. The Judgment entering that verdict was affirmed by the United States Court of Appeals for the Ninth Circuit.<sup>2</sup>

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<sup>1</sup> Under *Ault v. International Harvester Co.* (1974) 13 C.3d 113 and *Prashker v. Beech Aircraft Corp.* (3rd Cir. 1958) 258 F.2d 602, cert.denied 358 U.S. 910, 3 L.ED.2d (1958), this evidence was offered to show proximate cause. The District Court agreed that it could go to show causation but excluded it as being too prejudicial. The issue was raised on appeal.

<sup>2</sup> The petitioners went on trial under pretrial orders that California and not Yugoslavia was the proper forum for the trial and that California law as to strict liability and damages would apply. The pretrial orders as to choice of law are reported in *Browne v. McDonnell Douglas Corp.*, 504 F.Supp. 514 (N.D. Cal. 1980). The pretrial orders as to forum are not reported. The orders as to choice of law and forum were not contested on appeal.

## I

The collision occurred when the left wing of the DC-9 cut through the cockpit section of the Trident and killed the two pilots. The Trident was flying straight and level and was leaving a 7-mile-long white contrail behind it. The DC-9 was a gradual climb to 35,000 feet. At impact, the angle from the centerline of the DC-9 to the Trident was approximately 30 degrees left. The windshield post in question was also located approximately 30 degrees left.

The District Court conceded that a defective windshield post had been proven when it stated that the

“jury could indeed find that the design of the DC-9 cockpit provided less than optimum fields of vision to the crew and did not conform to recommended specifications intended to maximize cockpit visibility.”

Appendix E, E-8. Those specifications provided that no windshield post within a sector of 20 degrees to 60 degrees left of the captain's forward vision exceed 2.5 inches in projected width. They were published by the Federal Aviation Administration as 14 CFR 4b.351-1 through 4b.351-3. 2.5 inches was specified because 2.5 inches is the average distance between the eyes of a human being. A human being cannot focus on and see an object behind an obstruction that exceeds 2.5 inches if the projected size of the object is less than the arc subtended by the obstruction. If the obstruction is less than 2.5 inches then bilateral vision enables a human being to see around it. The 20 to 60 degree sector was specified because that is a critical area for approaching aircraft and must be clear of any visual impairment.

Expert testimony established that the Trident approached the DC-9 from the left and was obscured from the view of the DC-9 captain by a windshield post that measured

4.42 inches in projected width. This post was located approximately 30 degrees left of the DC-9 captain's forward vision and was well within the sector where posts were not to exceed 2.5 inches. This testimony is at pages 650-673 of the Reporter's Transcript. This and other relevant portions of the transcript appear as Appendix F.

The size and location of the 4.42 inch post was not disputed by the respondent and was stipulated to. This stipulation was part of an 11 page Stipulation of Facts which was agreed to by all parties. It was read to the jury upon the agreed instruction that it was a true statement of facts and that the facts were to be regarded as conclusively proved. It was admitted into evidence and appears as Appendix G. It establishes many facts, including the qualifications and duties of the DC-9 captain and the geometry of the collision.

## II

The evidence established all the facts that could ever be proved about a high-speed, high-altitude, midair collision between two airliners. There will never be any survivors to tell what actually happened, and the wreckage, as in this case, will consist of small pieces and be spread over areas of at least five or ten miles. Still, as in this case, there can be enough facts from which a jury can reasonably infer causation. At bar, and as to the windshield post in question, those facts are the following: (1) The weather and visibility at the time and place of the collision were clear (Appendix G, G-4); (2) The Trident was leaving a seven-mile-long contrail behind it and was clearly visible in the sky (Appendix G, G-4-G-5; Appendix F, F-1); (3) The Trident approached the DC-9 from approximately 30 degrees left of the nose of the DC-9 and the DC-9 captain's forward vision (Appendix G, G-5-G-6; Appendix F, F-13-

F-14); (4) The DC-9 captain had a windshield post approximately 30 degrees left of his forward vision that measured 4.42 inches in projected width (Appendix G, G-12; Appendix F, F-13-F-14); (5) The 4.42-inch windshield post was wide enough to obstruct the Trident and its seven-mile-long contrail from the view of the DC-9 captain until a few seconds before the collision (Appendix F, F-7, F-10, F-13-F-14); (6) The DC-9 captain had a legal duty to maintain a constant visual lookout for other aircraft (Appendix G, G-7-G-8; Appendix F, F-2); (7) It is the custom and practice of airline pilots to maintain a constant visual lookout for other aircraft (Appendix F, F-6); (8) Airline pilots are diligent in maintaining a visual lookout for other aircraft (Appendix F, F-6); (9) The captain of an airliner sits in the left seat in the cockpit and has lookout responsibility from the center to the left side of the aircraft (Appendix F, F-4-F-8-F-9); (10) An airliner pilot would be expected to see another aircraft at high altitude that was leaving a 7-mile-long contrail behind it (Appendix F, F-5); (11) An airline captain would not be able to see another aircraft during his lookout that was approaching from behind a 4.42-inch windshield post (Appendix F, F-7); and, (12) The DC-9 captain made no attempt to avoid the Trident because he did not see it (Appendix G, G-11-G-12).

From these proven facts, the jury could reasonably infer that the DC-9 captain was performing his lookout duties and that he did not see the Trident because it was approaching from behind the oversized 4.42 inch windshield post. If they felt that he was not performing his duties then it could have found against the petitioners or reduced a verdict for them in accordance with California comparative fault principles. The District Court took this reasonable choice away from the jury.

## III

The District Court directed a verdict for the respondent on the grounds that evidence sufficient to support a jury verdict on the issue of proximate cause had not been presented (Appendix E, E-7-E-8). According to the District Court,

"[f]or the jury to be permitted to find such a proximate cause relationship, there must be evidence from which it could also find that more probably than not, that is to say, by a preponderance of the evidence, the failure to see the other aircraft was caused by the impairment to visibility, i.e., that those impairments were a substantial factor in preventing the crew from seeing the Trident."

*ID.* It then postulated, on the basis of its own imagination and without support from the record, that

"the failure to see the Trident could just as likely have been caused by *other circumstances*, such as the crew's inattention or its preoccupation with other duties or simply a failure to spot the Trident even though it was visible." [Emphasis added.]

*ID.* However, there was no evidence of "other circumstances" presented at the trial. To the contrary, the evidence was that other duties would not prevent the crew from looking out and seeing other aircraft (Appendix F, p.368). By considering speculative evidence that was not favorable to the petitioners, the District Court violated the rule that the evidence must be viewed in the light most favorable to the party opposing a motion for a directed verdict (*Continental Ore Co. v. Union Carbide & Carbon Corp.* (1962) 370 U.S. 691, 8 L.Ed.2d 777), as well as the rule that only evidence favorable to that party be viewed



(*Continental Ore, supra*; *Berry v. United States* (1941) 312 U.S. 450, 452-453, 85 L.Ed. 945, 946-947; *Wilkerson v. McCarthy* (1949) 336 U.S. 53, 57, 93 L.Ed. 497, 502). In so doing, it increased the conflict between the circuits as discussed in the Argument and violated the petitioners' right to a jury trial.

## ARGUMENT

The Ninth Circuit Court of Appeals affirmed the directed verdict on the grounds that federal law and not state law controls the sufficiency of evidence to support a jury verdict on the issue of proximate cause. Appendix C, C-1. In so doing, it has given this Court the opportunity to finally decide whether federal law or state law controls the sufficiency of the evidence on a motion for a directed verdict. This decision has never been made and is necessary to resolve ongoing conflicts on the issue among the circuits. It is to preserve the petitioners' right to a jury trial and a definitive state policy in strict products liability cases.

## I

In *Stoner v. New York Life Ins. Co.* (1940) 311 U.S. 464, 85 L.Ed. 284, this Court suggested that whenever jurisdiction is based on diversity of citizenship a federal court should follow state law in determining the sufficiency of evidence to support a jury verdict. Subsequently, this Court has cited *Stoner* for that proposition (*Byrd v. Blue Ridge Rural Elec. Corp. Inc.* (1958) 356 U.S. 525, 540, N.15, 2 L.Ed. 2d 953, 964) and then backed away (*Dick v. New York Life Ins. Co.* (1959) 359 U.S. 437, 3 L.Ed. 2d 935).

The consequence is a conflict among the circuits, with some of the circuits deciding both ways.<sup>3</sup>

The conflict has been recognized by this Court but not resolved. *Dick v. New York Life Ins. Co.* (1959) 359 U.S. 437, 444-445, 3 L.Ed.2d 935, 941. As this Court explained in *Dick*,

"[I]urking in this case is the question whether it is proper to apply a state or federal test of sufficiency of the evidence to support a jury verdict where federal jurisdiction is rested on diversity of citizenship. On this question, the lower courts are not in agreement. . . . But the question is not properly here for decision because, in the briefs and arguments in this Court, both parties assumed that the North Dakota standard applied. . . . Under these circumstances, we will not reach out to decide this important question particularly where, in the context of this case, the two standards

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<sup>3</sup>The Second, Third, Fifth, Sixth, Seventh, Eighth, and Ninth Circuits have applied the state standard (*Calvert v. Katy Taxi, Inc.* (2nd Cir. 1969) 413 F.2d 841; *McDermott v. John Hancock Life Ins. Co.* (3rd Cir. 1958) 255 F.2d 562; *Chumbler v. McClure* (6th Cir. 1974) 505 F.2d 489; *Lorance v. Marion Power Shovel Co.* (7th Cir. 1975) 520 F.2d 737; *Continental Can Co. v. Horton* (8th Cir. 1957) 250 F.2d 637; *Shafer v. Mountain States Tel. & Teleg.* (9th Cir. 1964) 335 F.2d 932). The Second, Third, Fifth, Seventh, Eighth, and Ninth Circuits have also applied the federal standard (*Reynolds v. Pegler* (2nd Cir. 1955) 223 F.2d 429; *Wards v. National Life & Acc. Ins. Co.* (3rd Cir. 1965) 347 F.2d 760. *Gray v. Martindale Lumber Company* (5th Cir. 1975) 515 F.2d 1218; *Gudgel v. Southern Shippers, Inc.* (7th Cir. 1967) 387 F.2d 723; *F. W. Woolworth Co. v. Carriker* (8th Cir. 1939) 107 F.2d 689; *Safeway Stores v. Fannan* (9th Cir. 1962) 308 F.2d 941).

The 4th and 10th circuits have generally applied the federal standard (*Bryant v. Robinsons Investment Company* (4th Cir. 1971) 435 F.2d 1345; *Oldenberg v. Clark* (10th Cir. 1974) 489 F.2d 839).

are substantially the same. A decision as to which standard should be applied can well be left to another case where the question is briefed and argued."

359 U.S. at 444-445, 3 L.Ed.2d at 941. The issue again came up in *Mercer v. Theriot* (1964) 377 U.S. 152, 12 L.Ed.2d 206, where the Court had granted certiorari specifically for the purpose of resolving the alleged conflict among the circuits, but the issue again evaporated, the reason being that

"[t]he evidence was sufficient under any standard that might be appropriate — state or federal."

377 U.S. at 156, 12 L.Ed.2d at 209. To date, the question remains unresolved.

In the case at bar, the issue is again presented but will not evaporate. The parties disagree as to which standard applies and, as will be seen, the standards are considerably different. Furthermore, the issue and the only issue in the case is the test of the sufficiency of the evidence to support a jury verdict.

## II .

One reason why the circuits are in conflict may be the result of stating the problem as one of the "sufficiency of the evidence." Such terminology may conceal the distinction between applying a rule of decision which is governed by state law and a rule of procedure which is governed by federal law.<sup>4</sup> The petitioners assert that a rule of decision is at issue and that California law should govern. They also assert that because of the frequent difficulty in classifying the issue as a rule of decision or a rule of procedure and because of the risk of diminishing the right to a jury trial,

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<sup>4</sup>In accordance with *Erie R. Co. v. Tompkins* (1938) 304 U.S. 64, 82 L.ED. 1188 and its progeny.

the state standard should always be applied where sufficiency of the evidence is at issue. Otherwise, the conflict among the circuits will remain.

As to the case at bar, the question is whether evidence of certain facts satisfies the requirement to prove the element of proximate cause. At the outset, this situation may be analogized to the question of presumptions and should be similarly controlled by state law. See *Cities Service Oil Co. v. Dunlap* (1939) 308 U.S. 208, 84 L.Ed. 196 and Federal Rule of Evidence 302. The question is not, for example, one of determining whether the testimony of a witness is credible. By itself, that question involves the division of functions between judge and jury and is properly determined by federal law. *Pinehurst, Inc. v. Schlamowitz* (4th Cir. 1965) 351 F.2d 509, 513, N.7, citing *Byrd v. Blue Ridge Rural Elec. Corp., Inc.* (1958) 356 U.S. 525, 2 L.Ed2d 953. It would not be if the sufficiency of proof were in question. That question concerns state policies as to who, what, and why liability will ensue.

The question has been decisively answered by California's court of last resort. That Court has held that where proof of proximate cause is at issue in a strict products liability case,

“[t]he policies behind the rule of strict products liability favor jury resolutions whenever the evidence can be interpreted to support plaintiff's position.”

*Campbell v. General Motors Corp.* (1982) 32 C3d 112,126. This is a substantially more liberal and relaxed rule than the federal rule which does not distinguish strict products liability cases and which requires “substantial evidence” to support a jury verdict. The federal rule applies the same rigorous standard to strict products liability cases as it does to negligence cases. See *California Computer Pro-*

*ducts, Inc. v. International Business Machines Corp.* (9th Cir. 1979) 613 F.2d 727, 733-734; *Neely v. St. Paul Fire & Marine Ins. Co.* (9th Cir. 1978) 584 F.2d 341, 345-346; *Bieghler v. Kleppe* (9th Cir. 1980) 633 F.2d 531, 533.

As explained in *Campbell, supra*, the question of the sufficiency of evidence to support a jury verdict on the issue of proximate cause.

“necessarily involves the standards for establishing a prima facie case of design defect”

set forth in *Barker v. Lull Engineering Co.* (1978) 20 C.3d 413, 32 C.3d at 118. These standards have long favored the inference of proximate cause in such cases. As repeatedly emphasized,

“one of the principal purposes behind the strict product liability doctrine is to relieve an injured plaintiff of many of the onerous evidentiary burdens inherent in a negligence cause of action.”

32 C.3d at 119, citing *Barker, supra*, 20 C.3d at 431-432. Thus,

“[t]o refuse to permit an inference of causation to be drawn from the showing made would permit defendants to escape liability for a breach of their legal duty simply because, through a fortuitous circumstance, plaintiff is unable to provide direct evidence that the defect was a proximate cause of his injuries. *Whether an inference should be drawn may be properly influenced ‘by a policy which makes the action favored or disfavored.’* [Citation omitted] ‘[T]he paramount policy to be promoted by the rule of strict liability is the protection of otherwise defenseless victims of manufacturing defects and the spreading throughout society of the cost of compensating them.’ [Citation omitted] *To deny to plaintiffs the benefit of the infer-*

*ence of proximate cause would frustrate that policy."*  
[Emphasis added]

*Dimond v. Caterpillar Tractor Co.* (1976) 65 C.A.3d 173, 183. In accord with this reasoning is *Lindsay v. McDonnell Douglas Aircraft Corporation* (8th Cir. 1972) 460 F.2d 631, wherein the court stated that the

"proof required in a strict liability case must be realistically tailored to the circumstances which caused the form of action to be created."

460 F.2d at 639, and held that neither proof of a specific defect is required nor is proof of the specific cause (*Id.* at 637, 639-640). This is particularly true in airplane crash cases where destruction is so pervasive. Nevertheless, they should go to the jury even though "the true cause of the accident [may] probably remain a mystery." *North American Aviation v. Hughes* (9th Cir. 1957) 247 F.2d 517, 521.

The Ninth Circuit incorrectly distinguishes *Campbell, supra*, on two grounds (Appendix C, C-1). The first is that the plaintiff in *Campbell* proved causation and the petitioners have not. This begs the question. The plaintiff there made a prima facie showing of causation under the liberal California rule favoring the inference of proximate cause. She was injured when thrown from her seat in a bus. She claimed the bus was defective because there was no rail for her to grab hold of and arrest her fall. There was no evidence that she could have reached or held onto a rail if one had been there.

The second incorrect ground is that the California standard applies only to defects in products "within the common experience of ordinary consumers." *Id.*, citing 32 C.3d at 127. The Ninth Circuit misses the fact that *Campbell* is based on the plaintiff making the required showing under

two California tests<sup>5</sup> for determining a defect (32 C.3d at 126) and that the “common experience” criteria applies only to the first test (32 C.3d at 127). It also misses the fact that obstruction caused by an oversized windshield post is within the common experience of an ordinary airline pilot just as a handrail is for an elderly woman.

Whatever its reasons for so distinguishing *Campbell*, the effect of the Ninth Circuit’s opinion is to defeat the California policy of preferring jury resolution of proximate cause in strict products liability cases. In so doing, it defeats the overall policy of strict liability doctrine and exceeds the scope of a rule of procedure.

### III

This Court has already decided in *Galloway v. United States* (1943) 319 U.S. 372, 87 L.Ed. 1458 that directed verdicts *per se* do not violate the constitutional right to a jury trial. Petitioners do not seek to reopen that issue. However, they do assert that under the test of constitutionality established by *Galloway* they have been deprived of that right.

As held in *Galloway*, the Seventh Amendment

“requires that the jury be allowed to make reasonable inferences from facts proven in evidence having a reasonable tendency to sustain them. It permits

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<sup>5</sup> The two tests were established in *Barker v. Lull Engineering Co.* (1978) 20 C.3d 413. Under the first test, a product is defective if it does not perform as safely as an ordinary customer would expect. This standard reflects a warranty analysis. Under the second test, a product is defective even if it satisfies consumer expectations if, through jury hindsight, the risk outweighs the benefits of design. Under this test the burden of proof shifts to the defendant after a *prima facie* showing. 20 C.3d at 431-432.

expert opinion to have the force of fact when based on facts which sustain it."

319 U.S. at 396, 87 L.Ed. at 1474. Thereafter, this Court expanded the requirements by establishing that it is necessary to look only to the evidence favorable to the party opposing a directed verdict. *Berry v. United States* (1941) 312 U.S. 450, 452-453, 85 L.Ed. 945, 946-947; *Wilkinson v. McCarthy* (1949) 336 U.S. 53, 57, 93 L.Ed. 497, 502; *Continental Ore Co. v. Union Carbide & Carbon Corp.* (1962) 370 U.S. 691, 696, 700-701, 8 L.Ed.2d 777, 782, 784-785.

At bar, the District Court refused to allow the jury to make an inference of proximate cause even though there was more than enough evidence to reasonably allow them to do so and even though the petitioners had proved everything that could be proved about proximate cause.<sup>6</sup> The consequence is that a midair collision case can never go to the jury whenever the pilot whose lookout was allegedly impaired has been killed. The District Court and the Ninth Circuit would apparently require testimony from the pilot that he was maintaining a proper lookout and did not see the other aircraft. That exceeds the *Galloway* requirement and infringes upon the Seventh Amendment.

The District court also considered evidence that was not favorable to the petitioners, even though no such evidence was produced. As pointed out in the Statement, the District Court concluded that the failure to see the Trident could just as likely have been caused by other circumstances. It did so even though evidence was produced that other "circumstances" do not impair lookout responsi-

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<sup>6</sup> *Campbell v. General Motors Corp.* (1982) 32 C.3d 112 affirmed the rule that in strict products liability cases production of all available evidence on the issue of causation warrants submission to the jury. 32 C.3d at 123.



bilities. This is prejudicial speculation on the part of the court and must be disfavored in the light of the Seventh Amendment. The function of the directed verdict was never intended to and cannot be given such scope.

### **CONCLUSION**

For the foregoing reasons, the petitioners respectfully request that their Petition for a Writ of Certiorari be granted and that the dismissal of their actions be reversed.

Respectfully submitted,

JOHN CLIFTON ELSTEAD  
*Counsel of Record  
for Petitioners*

Dated: March 18, 1983.

**Appendix A**

**UNITED STATES DISTRICT COURT**

**[LETTERHEAD]**

Case Number :

C77-2016, 77-2030, 77-2031, 78-0997, 78-2935,  
79-2804, 81-1841

Case Title :

Browne et al. -v- McDonnell Douglas Corporation

Date Mandate Filed: 1/5/83

**TO COUNSEL OF RECORD:**

The mandate of the United States Court of Appeals for the Ninth Circuit has been filed in the above captioned case.

Yours very truly,

**WILLIAM L. WHITTAKER, Clerk**  
/s/ Barbara Sleukin  
Case Systems Administrator

**Distribution: Civil      — Counsel of Record**

**Criminal — Counsel of Record.**

**U. S. Marshal**

**(Copy of Mandate)**

**U. S. Probation Office**

JUDGMENT

United States Court of Appeals  
For the Ninth Circuit

No. 81-4436

DC CV 77-2016, 77-2030, 77-2031, 78-0997,  
78-2935, 79-2804, 81-1841

Richard Lee Browne, et al.; Alfred Peetz, et al.;  
Zeynep Buge Guner, et al.; Alheid Leenderdse, et al.;  
Jeremy Nicholas Bowdler, et al.; Afet Hamamzi, et. al.;  
Annette Ruth Crook, et al.,

Plaintiffs-Appellants,

vs.

McDonnell Douglas Corporation, a corporation,  
Defendant-Appellee.

[Filed Jan. 5, 1983]

Appeal from the United States District Court  
for the Northern District of California

THIS CAUSE came on to be heard on the Transcript of  
the Record from the United States District Court for the  
Northern District of California and was duly submitted.

ON CONSIDERATION WHEREOF, It is now here  
ordered and adjudged by this Court, that the .....  
judgment of the said District Court in this Cause be, and  
hereby is affirmed.

Filed and entered November 17, 1982

**Appendix B**

**United States Court of Appeals  
For the Ninth Circuit**

**No. 81-4436**

**DC# C-77-2016/2030 77-2031, 78-0097 78-2935,  
79-2804 81-1841**

**Richard Lee Browne, et al.; Alfred Peetz, et al.;  
Zeynep Buge Guner, et al.; Alheid Leenderdse, et al.;  
Jeremy Nicholas Bowdler, et al.; Afet Hamamzi, et al.;  
Annette Ruth Crook, et al.,**

**Plaintiffs-Appellants,**

**vs.**

**McDonnell Douglas Corporation,  
a corporation,  
Defendant-Appellee.**

**ORDER**

**[Filed December 20, 1982]**

**Before: Choy, Sneed, and Farris, Circuit Judges**

**Appellants' petition for rehearing is denied.**

## **Appendix C**

**Richard Lee Browne, et al., Alfred Peetz, et al.,  
Zeynep Buge Guner, et al., Alheid Leenderdse, et al.,  
Jeremy Nicholas Bowdler, et al., Afet Hamamzi, et al.,  
Annette Ruth Crook, et al., Plaintiffs-Appellants,**

**v.**

**McDonnell Douglas Corporation,  
a corporation,  
Defendant-Appellee.**

**No. 81-4436**

**Unites States Court of Appeals,  
Ninth Circuit**

**Argued and Submitted November 3, 1982  
Decided November 17, 1982**

**BROWNE v. McDONNELL DOUGLAS CORP.  
PER CURIAM:**

This case arises from a mid-air collision in 1976 near Zagreb, Yugoslavia between a DC-9 commercial jet airliner operated by Inex Adria Airways and a British Airways Trident 3. Appellants (plaintiffs below) are the heirs of 36 decedents who were passengers on the Trident 3. Appellants allege that the Zagreb collision was caused by the defective design of the DC-9 cockpit, so that the DC-9 crew was unable to see the Trident 3 in time to avoid the accident.

The district court granted defendant's motion for a directed verdict at the close of plaintiff's case. The court held that, on the record before it and taking all inferences in the light most favorable to plaintiffs, a reasonable jury could not find by a preponderance of the evidence that the DC-9's design was a substantial factor in preventing the crew from seeing the Trident in time to avoid the collision. We have examined the record carefully and have concluded

that the record supports the district court's evaluation of the evidence.

The standard for determining the propriety of a directed verdict is the same for district and appellate courts, *California Computer Products, Inc. v. International Business Machines Corp.*, 613 F.2d 727, 734 (9th Cir.1979): A court must examine all the evidence in the light most favorable to the nonmoving party to decide whether there is "substantial evidence" that could support a finding for the nonmoving party. *Id.* at 733-34. In a case such as this one, where proximate cause is at issue, the nonmoving party will not have met its burden if the evidence merely suggests the possibility that proximate cause exists, *Neely v. St. Paul Fire & Marine Insurance Co.*, 584 F.2d 341, 346 (9th Cir.1978), or if causation is a matter of speculation. *Id.* at 345-46. Thus, for appellants, the nonmoving party here, to avoid a directed verdict, they must have presented substantial evidence that would rationally support the conclusion that a design defect in the DC-9 was a proximate cause of the Zagreb collision. Appellants have not presented such evidence.

Appellants contend, however, that in a diversity action such as this, state, not federal, law should govern the determination of what is sufficient evidence to take a case to the jury.<sup>1</sup> Appellants are mistaken in this assertion. *Fed-*

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<sup>1</sup> Appellants assume that California products liability laws strongly favors allowing the jury to infer proximate cause, and they rely on *Campbell v. General Motors Corp.*, 32 Cal.3d 112, 649 P.2d 224, 184 Cal.Rptr. 891 (1982), to support that view.

In *Campbell*, the California Supreme Court held, inter alia, that California courts should not grant a nonsuit to a defendant in a strict liability action where a design defect is at issue if the plaintiff has presented a prima facie case of causation, since under California law the burden of proving a design defect shifts to the defendant after a prima facie case is made. *Campbell* can be easily distin-

eral law decides whether evidence is sufficient to warrant giving a case to the jury. See *Bieghler v. Kleppe*, 633 F.2d. 531, 533 (9th Cir.1980).

Appellants also contend that a jury should be allowed to make much broader "reasonable inferences" from the facts in a mid-air collision case than in an ordinary action because of "the peculiarities of an aircraft case." Appellants cite no authority for this proposition, however, and we rejected an identical argument in *Leveresen v. Boeing Co.*, 510 F.2d 937, 938 (9th Cir.1975). As we said then, it is not the law that in aircraft crash cases everyone sued must pay.

Finally, appellants argue that the district court should have admitted evidence of other DC-9 accidents, testimony of an FAA official concerning those accidents, and an extract from a Yugoslav airline manual discussing the duties of Yugoslav pilots. The district court has broad discretion in determining the admissibility of evidence, and its decision will not be overturned unless there is an obvious abuse of discretion. *Hill v. Roller*, 615 F.2d 886, 891 (9th Cir. 1980). We hold that the district court's rulings did not constitute an abuse of discretion.

The judgment of the district court is affirmed.

#### AFFIRMED.

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guished from the present case. First, as the *Campbell* court noted, design defect does not become an issue for the jury in a strict liability action unless causation first is established, as the plaintiff in *Campbell* did, 22 Cal.3d at 119, 126, 649 P.2d at 228, 232, 184 Cal.Rptr. at 895, 899, and as appellants here did not. Second, the *Campbell* nonsuit standard applies principally to design defects in products "within the common experience of ordinary consumers," such as the handrails on a bus, 32 Cal.3d at 127, 649 P.2d at 233, 184 Cal.Rptr. at 900, and not to a sophisticated design such as the cockpit of a DC-9. Finally, as mentioned above, we are not obliged to look to state law when deciding how much evidence is needed to take a case to the jury in a diversity action.

## **Appendix D**

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**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA**

No. C-77-2016 WWS

Richard Lee Browne, et al.,

Plaintiffs,

v.

McDonnell Douglas Corporation,  
a corporation,

Defendant.

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No. C-77-2030 WWS

Alfred Peetz, et al.,

Plaintiffs,

v.

McDonnell Douglas Corporation,  
a corporation,

Defendant.

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[Filed June 16, 1981]

**JUDGMENT**

No. C-77-2031 WWS

Zeynep Buge Guner, et al.,

Plaintiffs,

v.

McDonnell Douglas Corporation,  
a corporation,

Defendant.

D-3

No. C-78-0997 WWS

Alheid Leenderdse, et al.,  
Plaintiffs,

v.

McDonnell Douglas Corporation,  
a corporation,  
Defendant.

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No. C-78-2935 WWS

Jeremy Nicholas Bowdler, et al.,  
Plaintiffs,

v.

McDonnell Douglas Corporation,  
a corporation,  
Defendant.

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No. C-79-2804 WWS

Afet Hamamzi, et al.,  
Plaintiffs,

v.

McDonnell Douglas Corporation,  
a corporation,  
Defendant.

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No. C-81-1841 WWS

Annette Ruth Crook, et al.,  
Plaintiffs,

v.

McDonnell Douglas Corporation,  
a corporation,  
Defendant.

## JUDGMENT

These actions came on for trial commencing on May 26, 1981, before a Court and jury, the Honorable William W. Schwarzer presiding. Mr. John C. Elstead of the Law Offices of Gerald C. Sterns appeared as counsel for the plaintiffs; Mr. Edwin W. Green and Ms. Mary E. Reilley of Bronson, Bronson & McKinnon, and Mr. Timothy R. Cappel of Bryan, Cave, McPheeters & McRoberts appeared as counsel for defendant McDONNELL DOUGLAS CORPORATION.

Mr. Trevor St. John Murphy, Captain Charles Owens, Captain Donald McClure, and Dr. Stanley Roscoe testified on behalf of the plaintiffs. The plaintiffs, after presenting all of their evidence, rested their case on Monday, June 1, 1981.

On June 1, 1981, defendant McDONNELL DOUGLAS CORPORATION moved the Court for a directed verdict.

The motion for a directed verdict having been heard by the Honorable William W. Schwarzer on June 1, 1981, and having been argued and submitted for decision and the Court having directed a verdict for defendant McDONNELL DOUGLAS CORPORATION, on June 2, 1981, for reasons stated by the court on the record and therefore,

IT IS HEREBY ORDERED AND ADJUDGED that:

1. Plaintiffs in each of these actions shall take nothing against defendant McDONNELL DOUGLAS CORPORATION by their Complaints;

2. Each of these actions is hereby dismissed with prejudice;

3. Defendant McDONNELL DOUGLAS CORPORATION shall have and recover its costs from the plaintiffs pursuant to Local Rule 265-1, et seq.

Dated : June 16, 1981

WILLIAM W. SCHWARZER  
Judge of the United States  
District Court

## **Appendix E**

### **In The United States District Court For The Northern District of California**

**Before: Honorable William W. Schwarzer, Judge  
No. C-77-2016 WWS**

**Richard Lee Browne, et al.,**

**Plaintiffs,**

**vs.**

**McDonnell Douglas Corporation,  
a corporation,**

**Defendant.**

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### **REPORTERS' TRANSCRIPT**

**June 2, 1981**

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### **PROCEEDINGS**

**Mr. Elstead: Your Honor, I wonder if before you make your ruling in this matter, I might have an opportunity to make a few last observations.**

**The Court: Certainly.**

**Mr. Elstead: I am sure you realized last night I thought very hard about this and attempted to peruse the facts as I know they stand in the case and what I feel to be an even more definite connection as to the proximate causation between this post and between this particular accident.**

**A particular observation, and then I will have a general one.**

**The particular observation is that the photograph that we utilized to construct our vision angle collision geometry**

## E-2

off of was a photograph taken by Paul Rich, who, at the time he took it, was the sort of lead man with the FAA, most knowledgeable in the use of the binocular camera and the individual who took photographs for the FAA which were utilized by the NTSB during the investigation of the previous DC-9 midair collision.

Yesterday or the day before, when Captain McClure was on the stand, Captain McClure testified about something called the design eye position. He testified how other aircraft other than the DC-9 do have mechanisms or devices in the cockpit which enable the pilot to position himself in the same approximate position of the design eye position.

He testified that the design eye position is known to all pilots as a position from which visibility is optimum to a pilot.

Yesterday, when Dr. Roscoe was on the stand, I put a question to Dr. Roscoe with respect to the design eye position at the time that we were discussing plaintiffs' exhibit which shows the tracing of the binocular camera photograph and the extent to which the DC-9 cockpit complies with the FAA visibility recommendations. And I made an offer at that time to read a portion of the deposition taken of Mr. Paul Rich in Washington, D.C., April 10, 1981. And what happens in Mr. Rich's deposition is the same thing that happens in the deposition taken from Mr. Borelli.

Of course, I have to leave it to the good conscience of the Court to make the ultimate decision on this, and hopefully it will be allowed to go to the jury so they can make a decision.

But both Mr. Rich, as I would have read in the deposition, and Mr. Borelli testified that they went there pursuant to the instructions of the NTSB, or the FAA, in company with McDonnell Douglas personnel and that McDonnell Douglas

personnel represented to them that if they put the camera here (indicating) and located it in such a situation, that it is going to be in the position which is referred to as the Douglas Eye position. This is the position which offers the optimum visibility for a pilot flying in aircraft, and there is testimony in the record on that.

I would have made that offer, or I did make that offer. We didn't get a chance to read that to the jury, but I think it is perfectly reasonable for a jury to be presented with the question as to whether or not a reasonable, highly experienced, long-time professional airline pilot would put himself in the cockpit of a DC-9 airplane which has passengers inside it and put himself in such a situation where he feels that he would be obtaining optimum visibility from the cockpit.

The Court: Is your argument directed to the point, Mr. Elstead, that there is a presumption, or the jury may assume that the seat of — the pilot's seat would have been in that particular notch that would correspond to the design eye position?

Mr. Elstead: Not in that particular notch. Unfortunately, in cases where everybody is killed and the record just scattered to the four winds, it is impossible to reconstruct precisely. As we all know, exactly where the seat was —

The Court: What are you saying?

Mr. Elstead: The difference between what shows up in these binocular camera photographs admitted into evidence by the plaintiffs and the one referred to by Mr. Green, which wasn't admitted into evidence, is a matter of a couple of degrees. And that couple of degrees doesn't alter but by a small portion the extent or the location of this total 31-degree area of obscuration.

And even though —

The Court: It shifts the contrail.

Mr. Elstead: It shifts the contrail. But it doesn't shift the other aircraft and the contrail out of the area of obscuration. It moves it into it, in there (indicating) —

And there are two questions that can be presented to the jury with respect to the effects of obscuration.

One is to what extent does the jury believe that the pilot was situated or was looking out and the other aircraft and contrail were presented in the binocular obstruction area. I don't think anybody will disagree that a pilot can't see through a post, and if it is in a binocularly obstructed area, that he won't be able to focus on it and recognize it.

But the other problem presented by the Post has to do simply with not being able to see with both eyes. It is the other effect that a Post, oversize like this, has, and that is that it forces a pilot to, in effect, look for traffic and see traffic with only one eye.

And when he is doing so, he is doing so in the far-out periphery of that one eye, and for all practical purposes, your honor, that is an unsafe condition. That is one of the assertions that has long been made in this case.

The Court: That could be.

Mr. Elstead: If this case is dismissed at this point, it means that nobody is ever going to be able to litigate the question of cockpit visibility in a Court of Law because nobody is ever going to be able to prove exactly where that pilot had his seat or exactly where his head was at any particular moment.

The Court: But that is not an argument, Mr. Elstead. The fact that the plaintiff can't make a case doesn't mean



that I should, therefore, dispense with the necessity of the plaintiff having to make a case and, instead, put the cockpit on trial here as though this were the National Transportation Safety Board or Federal Aviation Agency or some other investigative agency. That is not the purpose of this.

Mr. Elstead: I can't make that leap because if I can't prove where the pilot was, the plaintiff can't make a case.

The Record is full of facts upon which a jury can make a reasonable inference. The failure to and the requirement to look out; the factual reasons why these pilots would have had particular reasons to look out; the fact that they made no attempt to avoid the other aircraft; the assumption drawn from that by the Court itself yesterday that the pilot didn't see, that they were experienced pilots, that there was nothing to indicate that they weren't doing what they were supposed to do.

Now, it is circumstantial, I grant that. No case like this could be anything but circumstantial, because the pilots are dead, the proof has dissolved and gone away.

But that is the best plaintiffs can do in cases like that, and that is what courts and juries are for, is to take a long train of circumstantial evidence and decide if reasonable inferences can be made.

Now, perhaps the jury will agree with Mr. Green and say, "well, wait a minute. We just can't sit here and decide that the pilot was sitting in that seat, and we can't sit here and decide whether he was looking around the post or not looking around the post."

But that is what courts are for. That is what juries are for. Juries are to make those inferences. And I feel that we have done all that can be humanly possible to bring out in this courtroom all the particular facts which a jury could tie together and draw a reasonable conclusion from it.

Maybe they won't draw the conclusion I wish. They may draw the conclusion Mr. Ed, or Mr. Green — I apologize for the second time — wishes them to draw, in which case, I go home and Mr. Green is the victor.

But I think it is for the jury, your Honor. There has to come — the Court has to bite the bullet on a case like this. Otherwise, this kind of issue will never be litigated in a court.

And we have talked about and litigated this particular issue months ago when Mr. Green first made the motion for summary judgment. And it was clear then that no way could the plaintiffs have been able to show exactly where the pilots were in the cockpit, what they were doing.

We know they were in the cockpit. Mr. Green made a sleight-of-hand kind of comment about maybe the Captain was back of the airplane going to the bathroom.

But if you look at our agreement of facts, during those last few critical tragic seconds, both pilots were on the radio. Obviously, the captain had realized that there was something terribly amiss because he got on the radio. He started performing his responsibilities right down the line. He got on the radio while the copilot was on the radio and then, though told that there was an aircraft bearing down on him, he did nothing. He did nothing at all.

The Court: Fourteen seconds before the crash? They got a warning.

Mr. Elstead: I can do something in one second. A reasonable pilot can. That was too late for the action to be effective, I grant, or right on the border. But it wasn't too late for him to try something.

But the evidence shows he didn't try something. Why didn't he try something? Because he didn't see anything, your honor. That is what I want to present to the jury.

And if we did this case over a million more times, this case, another DC-9 midair case, a million more DC-9 midair cases, and if the case turns and falls on being able to prove what a dead professional airline pilot did, then it is hopeless. There is nothing I can do.

I will leave it there and leave it with the good judgment of the Court.

Thank you for your time and courtesy.

. The Court: Thank you, Mr. Elstead.

As you said, I have given considerable thought to this matter and the ruling that I make is not one that I arrived at lightly. And I have very well in mind the point that you make, the difficulty that a plaintiff faces in proving this kind of case. There is no question about that. And I have considered it.

But the question that is before the Court is whether the plaintiffs have produced evidence sufficient to permit a reasonable jury to find that defective or negligent design of the DC-9 cockpit was a proximate cause of the September 10, 1976, collision with the British Airways Trident.

In order to sustain a verdict, the evidence viewed in the light most favorable to plaintiffs would have to be sufficient to permit a reasonable jury to find that, more probably than not, the design of the cockpit prevented the crew of the DC-9 from seeing the Trident in time sufficient to enable it to take successful evasive action so as to avoid the collision.

From the evidence before the court, the jury could indeed find that the DC-9 crew, having taken no evasive action before the collision, did not see the Trident.

## E-8

The jury could indeed also find that the design of the DC-9 cockpit provided less than optimum fields of vision to the crew and did not conform to recommended specifications intended to maximize cockpit visibility.

So in that sense, the jury could indeed find that the cockpit design impaired the crew's ability to see other traffic.

But it does not follow from the apparent failure of the crew to see the Trident, coupled with the existence of impairment to visibility in the cockpit, that a proximate cause relationship has been established between the two.

For the jury to be permitted to find such a proximate cause relationship, there must be evidence from which it could also find that, more probably than not, that is to say, by a preponderance of the evidence, the failure to see the other aircraft was caused by the impairment to visibility; i.e., that those impairments were a substantial factor in preventing the crew from seeing the Trident.

Now, on the record before the court, the failure to see the Trident could just as likely have been caused by other circumstances, such as the crew's inattention or its preoccupation with other duties or simply a failure to spot the Trident, even though it was visible. That is not to say that the crew was negligent.

There isn't any evidence before the court, and no presumption attaches, which would permit the jury to find one way or the other. It is simply that in the ordinary course of events, a cockpit crew may fail to observe a particular aircraft at some particular spot at some particular time.

In other words, as you put it, Mr. Elstead, all sorts of inferences can be drawn from the facts before the Court, but the question is whether there is enough evidence here so that one can say that a preponderance of the evidence supports an inference that would sustain liability.

## E-9

To sum up this branch of the analysis, then, for the Court to hold that evidence of a failure to see, when combined with evidence of impairment to cockpit visibility, is sufficient to support a finding of causation that would be tantamount to making the aircraft manufacturer the insurer of the safe operation of its product by its customers' crews.

Now, plaintiffs argue further, however, that here the evidence would permit the jury to find that the cockpit design was, in fact, an obstruction to the crew's vision of the Trident and its contrail. And we must consider the pilot and the copilot separately.

First, with respect to the pilot, the evidence, when viewed in the light most favorable to plaintiff, shows that the cockpit post obscured the Trident and the contrail from both eyes until approximately one minute and 20 seconds before the collision, at which time the Trident's contrail began to come into view of the pilot's left eye.

That evidence, which makes the worst case against defendant, is based on the assumption that the pilot's seat was in the design eye position. That is to say, it was located so as to place the pilot's eyes in the design eye position. The seat is on a track which enables the pilot to move it forward and backward.

And there is evidence in this record from Captain McClure, as I recall, that pilots do move it backwards and forward. And I think he said that because he has short legs, he kept it in the forward position.

A movement of as little as two to three inches causes significant changes in the visibility geometry, resulting in the Trident being visible to the pilot at least with one eye during the critical last two or three minutes.

There is no evidence before the Court from which a jury could find in what position the seat was, in fact, set or that as a matter of practice or custom in the industry, it was more probable that it was in the design eye position than any other or that the design eye position was a normal position in which such a seat would be kept.

In other words, on the issue of obscuration of the pilot's vision, a finding for plaintiff would have to rest on the assumption that the seat was located at a point where the windshield post caused the maximum obscuration of the relevant field of vision in this case. That is, the direction where the Trident was located.

It is no more probable that the seat was located in that position than any other, so whatever inferences can be drawn are equally balanced. When they are equally balanced, the burden of proof has not been sustained.

The plaintiffs' proof, therefore, fails to establish the factual premise by a preponderance of the evidence.

Second, with respect to the copilot, the evidence is undisputed that the Trident was visible during the entire final two or three minutes from the copilot's seat through the center windshield; that is, the copilot would have been able to see the Trident's contrail, which is a long thin bright object contrasted against the sky, the far end of which was moving.

The plaintiffs contend that the relative small size, the angle and the location and configuration of the center windshield increased the difficulty of the crew in focusing on traffic through that center windshield, even though the view of that traffic was not obscured.

## E-11

Again, however, the problem with plaintiffs' case is the same as that which I discussed in connection with the first branch of this analysis.

Viewing the evidence concerning the copilot in the light most favorable to plaintiffs, it shows that the copilot failed to see an object in plain view and that the design of the windshield through which the object appeared made it more difficult for him to focus on that traffic.

From the evidence before the Court, however, it appears no more likely that the copilot was looking through the windshield and, in the course of looking, encountering these focusing difficulties created by design than it was that, for whatever other reason he might not have looked in that direction of the Trident at all and therefore, not seen it, although it was seeable.

So, for these reasons, the Court is compelled to conclude that the evidence before the Court would not permit a jury to find by a preponderance of the evidence that there is a proximate cause relationship either between the alleged design defects or between the alleged negligence in the design of the aircraft.

And for that reason, plaintiffs' case must fail and the motion to dismiss must be granted.

I will advise the jury now and tell them just briefly why their services won't be needed any longer so they will understand.

Is there anything further anybody wishes to take up?

Mr. Green: One thing. We have numerous bulky exhibits, and what I would propose with regard to those that won't reasonably go in a file, we could photograph them and leave photographs with the Court and I will be responsible for them, with the exception of the small model of the Trident

which is on loan from British Airways which I must return, if that is satisfactory to counsel.

Mr. Elstead: Yes.

The Court: That can be withdrawn. Put a note in the record.

Mr. Green: Thank you.

The Court: Do we have a picture of the Trident? Perhaps you can substitute a picture for the model.

Mr. Green: All right, your Honor, we shall.

The Court: You can take your time about removing this stuff. There is no rush about that.

Let's get the jury in.

(The following proceedings were heard in open court in the presence and hearing of the Jury.)

The Court: Good Morning, Ladies and Gentlemen. You may be seated.

One of your fellow jurors, Dorothy Innis, called in this morning and advised she had bronchial problems, and she has been excused.

I have a few words to say to you.

The Rules of Law provide that in order for the plaintiff to make a case for the jury to consider, the plaintiff has to present a certain minimum amount of proof. It is up to the Court to decide whether that minimum requirement has been met. When it is not met, then the case is to be dismissed at the end of the plaintiffs' case and it never goes to the jury.

The reason for that kind of rule — well, there are a variety of reasons, but, essentially, it is a reason of economy,



Judicial economy, because the Courts have a lot of things to do and ought not to take their time to try cases which are insufficient as a matter of law, so even if the jury returned a verdict it couldn't stand.

And, of course, lawsuits are expensive for plaintiffs and for defendants and even for people like you.

So, on the basis of that rule, a motion was made to the Court at the end of the plaintiffs' case. The Court has considered that motion and ruled this morning that the plaintiffs' case was insufficient as a matter of law to go to the jury.

And, essentially, the Court concluded that the relationship between the supposed defects in the cockpit and the supposed — and the fact that the pilots apparently didn't see the aircraft was simply not sufficiently established; that is, it was left as a matter of speculation. It could have gone either way and, therefore, there wasn't enough proof to establish that these defects could have been a cause that would have permitted you to find that those defects could have been a cause of the failure of the DC-9 crew to see the Trident.

Well, that is a very brief explanation. I wanted to tell you why the case has been dismissed. Perhaps some of you are disappointed in not having the opportunity to sit through another two, three weeks and decide the case and maybe the claims that arose in connection with that case, but that is the way the rules operate; and whether you are disappointed or not, that is a result.

But I wanted you to feel that we appreciate your service. Even though you did not have an opportunity to render a decision, the fact you were here, the fact you were willing to serve, that you were willing to make what potentially

## E-14

could have been a substantial length of time available for Jury Service, is very important.

It is the willingness of people like to you devote your time and effort and to make the sacrifices necessary to serve as a jury that make it possible for us to have a jury system where everybody can get a fair trial.

When I say, "Everybody can get a fair trial," I wouldn't want to walk out of here and say, "Everybody got a fair trial except in this case." A fair trial means, among other things, not only going to the jury but presenting enough evidence so that you have a case that may lawfully go to the jury. That is a part of the concept of a fair trial, as we know it.

I want to also thank you for your attentiveness and cooperation. You obviously were thoughtful and devoted considerable effort and attention to this case and you were a good jury. I hope you are not too disappointed, but you will have another opportunity to serve, I am sure.

So you may be excused at this time. Thank you very much.

(Jury dismissed.)

The Court: Is there anything further?

Mr. Green, submit a Form of Judgment, will you please?

Mr. Green: I shall, your Honor.

Would you like to see a videotape of the upper sector?

The Court: Yes. I would. I haven't seen that.

Off the record.

(Court adjourned.)

## Appendix F

A. They were probably on another frequency because we never heard them.

"Mr. Green: That's all I have."

That was questioning by Mr. Ed Green.

Next my questioning begins:

Q. My name is John Elstead, and I am one of the attorneys for some of the people who lost some relatives on the aircraft that crashed.

A. The other party.

Q. I am on the other side.

I would like to back up a little bit to the point in which you broke out of the clouds during your trip from Frankfurt to Belgrade.

Approximately how far away from Zagreb was it when you broke out?

A. Frankfurt, that's about, I think it's nine minutes flying from Klagenfurt to Zagreb.

Q. What kind of cloud condition was it that you were flying in up to that time?

A. Then we were flying in clouds so it was well above flight level 290.

Q. Was your transition from the cloud condition to the no-cloud condition an abrupt one or was it a gradual dissipation of the clouds?

A. It was pretty abrupt.

( \* \* \* )

that you had from the past?

A. It is understood by Yugoslav pilots no worry but they will be controlled under radar without any special question, but for foreign pilots we used to request squawk, this meant special code for secondary transponder and pilots normally agreed without any other question and put and set their transponder or requested course.

Further question:

Q. With regard to the separation of aircraft were you giving radar separation or were you using proper measures to separate aircraft?

A. It was one special, if I say, combination. We had to separate aircrafts in relation to other control centers by procedure control. This means on same flight level not below 10 minutes. Because of that we gave transfers and received transfers for coming, and leaving aircraft with separation 10 minutes, but the inside our control space it was normally to use radar for suppression and for vector, but only inside our space, not overbound it.

Q. To make sure I understand, then, when you were handling aircraft off outside your boundary you have it least 10 minutes between aircraft the same flight level?

A. Yes.

( \* \* \* )

Q. What, sir, would you say would be the longest period that one might go while tending to something else without actually looking out at the windscreen?

A. When I went back to the toilet.

Q. Excuse me, Okay.

How about while in the cockpit, what would be the longest time between scans?

A. It is difficult to tell, but I would have thought that any activity within the flight that takes the captain's head down is a matter of a few seconds.

Q. Could it also be a matter of a few minutes?

A. I don't think so.

Q. Let's suppose, sir, that you were given a change in your clearance. You would jot the clearance down?

A. Yes.

Q. And you would pick up the mike, or if you had a boom mike, you would push a button and you would report back to the controller. Could that take as much as a minute or more?

A. No.

Q. Have you ever put something up on the windscreen to keep the sun from beating in on you?

A. Not me.

Q. Have you ever seen that done?

A. Yes.

( \* \* \* )

F-4

A. Yes.

Q. As a matter of fact, with regard to the aircraft on the right hand side of the aircraft, those may be more clearly visible to the co-pilot, so you expect him to keep a lookout there?

A. Yes.

Q. In fact, you expect him to keep a lookout, if I might refer to the photograph of the Trident, from the center windshield to the right hand side?

A. The scan actually probably would be longer than that, but generally speaking the captain would expect the co-pilot to look far right and the co-pilot would expect the captain to look far left, because one is interposed to the other side of the windscreen.

Q. And regardless of who is flying the aircraft — let me reframe the question, it was terrible.

A. You were telling us a few moments ago about the pilot's scanning for a few moments, and then doing other duties. The co-pilot is doing the same thing, except when he is in the bathroom?

A. You mean scanning and doing other things? Depending upon his allocation of duties, both of them are doing other things.

Q. Now, sir, with regard to seeing other aircraft at high altitudes, it is very difficult, is it not, for the

( \* \* \* )

F-5

Q. Captain, bearing in mind that it is difficult at high altitudes for pilots to make judgments as to whether or not an aircraft they see coming toward them will go above them or below them, would that — does that mean that a pilot won't take any action, or that the pilot won't make a judgment as to whether or not action is necessary to avoid that aircraft?

A. The answer to that is no.

Q. So even though the aircraft — even though you can't determine whether it would go below or above, you would still make a judgment as to whether or not some action was necessary if that aircraft was on a collision course with you, is that correct?

A. Yes.

Mr. Green: Asked and answered, and leading, and it's outside the scope.

The Court: Overruled.

Mr. Elstead: Q. Now, captain, would you expect to be able to see another aircraft, even though you're flying at high altitudes, and in a fast-moving jet aircraft that was, leaving a white condensed vapor trail or contrail behind it that was approximately seven miles long?

A. Yes.

( \* \* \* )

F-6

A. I'd say the majority of pilots are very diligent in their traffic scan.

Q. But there are some, sir, that are not as diligent, are there not?

A. If so, I can't think of a specific case, sir.

Q. So, then, sir, it's your testimony, and will be your testimony, that all pilots maintain the same standard of vigilance at all times?

A. I have never seen anything in my experience in a cockpit that would lead me to believe that one pilot, either a captain I flew with, or a first officer, was anything other than diligent as he could possibly be in maintaining a traffic watch.

Q. Sir, do you recall when we took your deposition and discussed the working of a crossword puzzle in the cockpit?

A. Yes, sir.

Q. And, sir, it is your opinion, is it not, that non-operational conversation is a distraction which you would not permit in your cockpit?

A. No, I don't think that's a true statement.

Q. Sir, do you have any rules when you're flying captain with regard to non-operational conversation?

A. I don't think particularly, but the F.A.A. just put in one.

Q. What's theirs?

( \* \* \* )



can talk about his personal experiences in the cockpit, and the use of that windshield.

Mr. Elstead: Okay.

The Court: What, on the basis of his personal experiences, he would — what conclusions he's reached as to that.

Mr. Elstead: All right.

Q. Based on your personal experience in the DC-9, captain, have you reached any conclusion about the likelihood of being able to pick up an aircraft approaching your aircraft on a collision bearing from behind the 4.42-inch post?

A. Yes, sir.

Q. What are your conclusions, captain?

A. I think the aircraft would be hidden by that post.

Mr. Elstead: Nothing further. Thank you.

The Court: Cross-examination.

#### CROSS-EXAMINATION

By Mr. Green:

Q. Captain McClure, every time you step on a DC-9, you sign a dispatch release, do you not?

A. That's correct.

Q. And in that dispatch release, you verify or certify that, in your opinion, the DC-9 is an airworthy and a safe aircraft to fly, do you not?

( \* \* \* )

bigger than those on the DC-9.

Q. Okay. When you say, "considerably bigger," can you give us some idea of how considerably bigger?

A. Well, I've never measured the windshield, so it would be pure speculation.

Mr. Green: Your Honor, I object.

The Court: Don't speculate; don't speculate. You have given us your impression.

Mr. Elstead: Q. Captain, would you expect a reasonably prudent average airline pilot captain who was flying the left seat of the DC-9 to spend as much time looking out for traffic on the opposite side of the aircraft, namely, the co-pilot's side of the aircraft, as he would looking out for traffic on the left side of the aircraft, or on the captain's side of the aircraft?

Mr. Green: Object, your Honor. It's cumulative. It's already been testified to by Captain Owens.

The Court: Overruled.

You may proceed.

The Witness. No, I would expect the primary area of traffic scan the captain would engage in would be ahead and to the left of the aircraft.

Mr. Elstead: Q. And, conversely, would you expect the primary scan of the co-pilot to be ahead and to the right of the aircraft?

( \* \* \* )

F-9

A. Yes, sir.

Q. Mr. Green asked you some questions regarding decision times insofar as the proximity of other aircraft are concerned.

Calling your attention to —

Mr. Green: What are you looking for?

The Court: We will take our — are you almost finished?

Mr. Elstead: I will be about 15, 20 minutes.

The Court: We will take our recess now until 1.30.

Remember the admonition of the Court, ladies and gentlemen, don't discuss the case, don't talk about anything connected with the case.

(Luncheon recess.)

( \* \* \* )

is the pilot's group, and the lower group the co-pilot's or view from the pilot's seat and the co-pilot's seat.

Mr. Elstead: I call the Court's attention at this time to plaintiffs' 10. Plaintiffs' 10 will be a xerox copy of this photograph.

The Court: I now have 84-E. Isn't it better to do that?

Mr. Elstead: These were marked later, this has already been identified.

The Court: All right.

Mr. Elstead: Q. That photograph, plaintiffs' 10, Dr. Roscoe, have you seen that photograph before?

A. Yes, I have.

Q. And can you tell me what that is a photograph of?

A. That is, as I say, a photograph taken with a binocular camera from the DC-9 captain's position.

Q. Is the tracing that appears on this poster which is 84-E a tracing and enlargement taken from that photograph?

A. Yes, it is.

Mr. Elstead: Your Honor, I would ask that plaintiffs' 10 be admitted into evidence.

The Court: It will be received.

(Plaintiffs' Exhibit 10 was received into evidence. Photograph.)

Mr. Elstead: Q. Now, Doctor, what do these

( \* \* \* )

A. No, it will not.

Mr. Elstead: Your Honor, I ask that 84-L be admitted.

The Court: What's 84-L? I thought we were talking about 84-P.

Mr. Elstead: 84-L.

The Court: Well, will you identify 84-L? All right. That's the two-and-a-half-inch diagram, it had not been previously identified.

84-L will be received.

The Clerk: Plaintiffs' 84-L in evidence.

(Plaintiffs' Exhibit 84-L received into evidence.)

Mr. Elstead: Q. I call your attention, now, Dr. Roscoe, to 84-M, doctor and can you tell us what 84-M represents?

A. It represents or illustrates the effect of a narrower post and this one, incidentally, is not to scale, to make it possible to get it on the chart, it is not represented as being to scale.

Q. Now, to what extent is there a binocular obscured area created by a two-inch post?

A. There would be an obscuration of two inches or something immediately behind the post, but that would be a wedge-shaped region that would diminish to something in a matter of a few feet.

Q. Would a pilot then be able to look at a two-inch post with both eyes and focus on an object or an aircraft appearing behind that post?

A. Yes, that would be possible beyond the post.

Mr. Elstead: I ask that 84-M be admitted, your Honor.

The Court: It will be received.

The Clerk: Plaintiffs' 84-M in evidence.

(Plaintiffs' Exhibit No. 84-M was received into evidence.)

Mr. Elstead: Q. Doctor, would the effect of these two-inch, two-and-a-half-inch and 4.42-inch posts on the ability to — strike the question.

Have you made any determination as to whether or not the Trident and its contrail would have appeared in the obscured area created by the 4.42-inch post?

A. Yes.

Mr. Green: Your Honor, I ask if the witness could be asked the next question with regard to the utilization of the chart, with regard to the use of it, if he could be asked the next question so I can pose an objection.

The Court: Lay the foundation for the exhibit before you display it.

Mr. Elstead: Okay.

Q. And have you determined insofar as whether or not the Trident and the contrail appeared in the area of obscuration created by the 4.42-inch post?

Mr. Green: I'll object to that, your Honor, as no foundation. There's no foundation as to where the seat was set, as to whether the pilot had rotated his head or not, or, in fact, whether or not the pilot was indeed looking in this direction or some other direction.

In addition to that, there's no evidence with regard to the co-pilot's activities.

The Court: Well, lay the foundation for whatever opinion you're going to have him express.

Mr. Elstead: Q. Doctor, have you made a determination of the area of obscuration created by a 4.42-inch post?

You testified, doctor, that you've made a determination that the Trident and contrail appeared in an obscured area.

The Court: Just a minute. I'm not going to get him to give an opinion until you have laid a foundation.

Mr. Elstead: Yes, sir. I was just trying to —

The Court: For how you reached whatever his opinion was, so you can ask him questions that go to foundation, but not questions that may disclose whatever his ultimate opinion is.

Mr. Elstead: Doctor, did you determine what the collision bearing between the — as being from the DC-9, between the DC-9 and the Trident was?

A. Yes.

Q. Okay. And did you determine that — to what degree did you determine that to be?

A. 30.7 degrees to the left of the forward vision.

Q. Okay. And what assumptions did you make in determining — did you make any determination of the total area of obscuration, monocular and binocular, created by a 4.42-inch post in a DC-9?

A. Yes.

Q. Now, with respect to this case, what assumptions did you utilize to — in order to place the obstructed area created by the post, insofar as the location of the Trident and the contrail were concerned, did you — in other words, did you utilize a measurement, based upon the pilot looking at any particular point —

The Court: Well, just let him testify what he did, don't lead him.

The Witness: I used the binocular photograph that we have discussed this morning that was provided by the National Transportation Safety Board.

Mr. Elstead: Q. In utilizing that photograph, at what point did you begin going from left — from right to left, at what point did you begin the obstructed area created by the post?

A. At approximately 30 degrees.

Q. Okay. And why did you begin at approximately 30 degrees?

A. Well —

The Court: We're talking about 30 degrees from the forward access of the aircraft?

The Witness: That's correct, Sir.

The Court: To the left?

The Witness: Because it falls right on the line that's drawn by the binocular camera on that photograph, which falls right down the edge of the post.

Mr. Elstead: Q. Okay. Beginning at that point, how far to the left does the obstructed area exist?

Mr. Green: Well, your Honor, I'm going to object to the use of that photograph on the ground that there is no evidence as to its accuracy with regard to position, its correlation between that position and the place where the pilot was seated.

The Court: We've got two separate problems: one of them is that the photograph is accurate, that it does, the photograph accurately purports to show — is it accurate



with respect to what it purports to show; you don't have any problem with that, Mr. Green?

Mr. Green: Yes, I do.

The Court: The photographs? We're not talking about the accident, I'm talking about the photograph, does the photograph accurately portray what it purports to portray, that it, the vision from the cockpit from the point at which the camera was located, do you have any problem with that, Mr. Green?

Mr. Green: If I may have one moment.

(Short pause in proceedings.)

Mr. Green: Your Honor, the photograph shows what it shows, but the position from which it is taken can alter what it shows.

The Court: Well, of course, of course, that's what we're coming to.

Mr. Green: Okay.

The Court: That's why I say there are two separate propositions, one of them is whether the photograph is accurate in what it portrays as what it is that it purports to be; and the second question is what did the pilot see from the point where he was, immediately preceding the collision, but that's a separate problem. He can testify, the expert can testify as to the vision from a particular point given certain assumptions, but it's essential that the record state precisely what the assumptions are, on the basis of which he draws certain conclusions.

Now, whether or not those conclusions are applicable to the facts of the accident is a wholly-distinct question that we have to deal with; do I make myself clear?

Mr. Elstead: Yes, sir.

The Court: All right. I will not permit him to testify concerning any areas of obscuration unless there's a full and complete and clear foundation for the conclusion that he reached with respect to the area of obscuration given any particular set of circumstances.

But, Mr. Elstead, you have somebody with you here, I wish you would utilize your assistants to find these exhibits for you, get them lined up.

Mr. Elstead: Okay.

Q. Doctor, in determining your determination of where the area of obstruction appeared, did you utilize the binocular camera photograph in which this tracing is made?

A. I did.

Q. Okay. And you began your area of obscuration at approximately 30 degrees left; is that correct?

A. That's correct.

Q. And why did you begin it at approximately 30 degrees left?

A. Because that's where it starts on that binocular photograph.

Q. It is true, however, that if one moved that binocular camera photograph a few inches one way or the other, that there could be a variation of a degree or two between where the binocular obstructed area appeared; is that correct?

A. That's correct.

Q. Now, does that —

The Court: Well, does the extent to which the area of obscuration moves, does that depend on the extent to which he moved the camera?

The Witness: Yes.

The Court: All right.

Mr. Elstead: Q. Now, assuming we moved the camera — the camera was moved one to two inches, can you tell us approximately how much difference that would make in the beginning of the binocular obstructed area?

Mr. Green: What direction? I object, your honor, as vague.

The Court: All right. Rephrase the question.

Mr. Elstead: Q. If we move the monocular camera approximately one to two inches forward of where it was in the photograph in which this tracing is made, would that move the binocular-obstructed area farther to the left or farther to the right?

A. If you move the camera forward, it would move it to the left, as seen in the picture.

Q. Approximately how far would an inch or two movement of the camera move the monocular-obstructed area?

A. Just two or three degrees.

Q. Would an aircraft approaching another aircraft from approximately 30 to 31 degrees still fall within the binocular-obstructed area, even though the camera was moved plus or minus an inch or two, from that point?

A. I didn't hear whether you said "Monocular" or "Binocular."

Q. Binocular.

A. It would bring it out of the binocular obstruction.

Q. This is the aircraft. To what extent would it bring the aircraft out of the binocular-obstructed area?

A. The aircraft or the contrail.

Q. The aircraft.

A. By a small amount.

Q. What if the aircraft were leaving a 7-mile long contrail, would the 7-mile long contrail appear in the binocular-obstructed area?

Mr. Green: I hate to keep objecting, but he is leading the witness.

The Court: Sustained. Rephrase your question.

Mr. Elstead: Q. What would happen with a camera movement, what would happen to a 7-mile-long contrail left by an aircraft which was approaching the DC-9 from approximately 30.7 or 31 degrees?

A. Most of it will still be obstructed, some small portion of it might appear. There would be a gap between the airplane and the beginning of the contrail, it doesn't form immediately behind the airplane.

Mr. Green: Your Honor, I'll ask that the answer be stricken as incomprehensible.

The Court: It's sustained.

Mr. Elstead: Q. Now, would movement of the monocular camera remove the aircraft alone from the monocular-obstructed areas?

A. Not the motion in the amount you've described, no.

Q. With respect to the contrail of the aircraft, if it was a 7-mile-long contrail, would the movement of the camera still present the contrail within the monocular-obstructed areas?

A. Yes.

Q. Now, with respect to your testimony about the location of the Trident and the contrail and the obstructed areas, does it depend upon the monocular camera being in one particular position in the seat?

A. Please repeat the question.

Q. With respect to your testimony about the location of the Trident and the contrail and the extent to which it would have been obscured by the obstructed area created by the post, does that vary according to the location of the binocular camera photograph?

A. The extent of the obstruction is the same, but its location varies.

Q. And even if the binocular camera were placed in a position, say, as much as two to three or four inches different than where it was in this photograph, would it still be your testimony that the Trident and contrail were in 31-degree obstructed area created by the 4.42-inch post?

Mr. Green: Objection.

The Court: Sustained.

Mr. Elstead: If the Court wishes me to lay any more foundation for that, I need to use the other exhibits if that is all right.

The Court: I thought you had covered the area.

Mr. Elstead: I think I have. I think the foundation is there and explains the basis upon which he has made the location of the Trident.

The Court: I thought you covered the whole subject. Is there anything left?

Mr. Elstead: Can I proceed?

The Court: You can ask the question and then we will decide whether the foundation has been laid or not.

Mr. Elstead: Q. Doctor, I want to call your attention to 84-O. Can you tell us what these 19 degree, 30 degree, 39 degree and 50 degree lines represent?

A. If you take the angles in the chart just by your right knee and place them on, about 30 degrees left of the forward view for the beginning of the binocular obstruction, that would be the —

Q. Let me start near the beginning, this line, 39 degrees, what does that represent?

A. That represents the heading of the DC-9.

Q. What does this line 19 degrees represent?

A. That would be the beginning of the monocular obstruction for the left eye.

Q. What does the 30 degree line —

A. That is the beginning of the binocular obstruction.

Q. With respect to the 39 degrees?

A. It would be the other side, the end of the binocular obstruction.

Q. 50 degrees?

A. That would be the other edge of the monocular obstruction for the right eye.

Q. Now, what do these three blue lines appearing at different times represent?

A. That would be the 7 mile long contrail of the Trident.

Q. And is this seven mile long contrail represented on here to scale?

A. Yes, it is.

Q. And how did you go about determining that this was the scale?

A. Well, I asked the, the draftsman to draw it to scale.

Q. I mean, what calculation did you perform to —

A. Oh, I —

Q. To show that this line here accurately represent the seven-mile long contrail?

A. It is a trigonometric solution to a triangle.

Q. Did you take into consideration the heading of the Trident in making this computation?

A. Yes.

Q. Now, if a pilot in the DC-9 had his head or his eyes in the approximate location of where the binocular camera had its lenses, as represented in this tracing of the binocular camera photograph, is this where the seven mile long contrail would have appeared approximately two minutes and 50 seconds prior to the crash?

A. Yes.

Q. And is this where it would have appeared approximately two minutes before the crash?

A. Yes.

Q. And this is where it would have appeared approximately one minute?

A. Yes.

Q. I notice on here you haven't made a representation as to the Trident Aircraft itself. Can you tell us why that is?

A. I would not expect the Trident itself to be visible at that range.

Q. Is it your opinion, doctor, then, that if the Captain of the Inex-Adria DC-9 had his eyes in the approximate same location of the Binocular Camera Photograph, that this is where the contrail of the Trident would have presented itself; is that correct?

Mr. Green: Just a moment.

I will object to that, your Honor. Once again, where his eyes are and where he was looking may be two separate matters.

Mr. Elstead: Q. Doctor, are you familiar with a term called the design eye position?

A. Yes.

Q. Can you tell us what that is?

A. Well, it is used in the design of a cockpit to serve as a point of reference or origin for the location of the instruments on the instrument panel or the, the posts and windshield, in this case.

Q. Is that supposed to be a position representative of where the best visibility would be from the cockpit?

A. Generally speaking.

Mr. Elstead: Your Honor, I would like to, as part of the further foundation here, read a portion of the deposition that was taken of Mr. Paul Rice, the FAA employee who took this particular binocular camera photograph that is being utilized here.

The Court: I don't see why you have to do that. The only thing that is relevant is the extent to which this witness, to which there is a foundation for this witness' opinion.



Do you need what an FAA employee said to express an opinion as to these calculations that he made?

Mr. Elstead: No, not for that, your honor, I don't.

Q. Is it your opinion, doctor, that with the DC-9 Captain's eyes in the approximate position of that camera, that the seven-mile long contrail left by the Trident would have fallen entirely within the binocular obstructed area until a period of time approximately one minute prior to the crash?

A. Yes, approximately.

Q. And approximately one minute prior to the crash, what begins to happen?

A. Well, the very far end of the contrail, the fading end of it, would begin to appear in the monocular view of the left eye.

Q. I notice that there is some distance here between the beginning of the contrail and the 30 degree line at the two minute and 50 second point prior to the crash.

Have you made any determination as to the approximate extent, degreewise, that the beginning of the contrail appears to the left of the 30 degree line?

A. In this assumption, it is seven-tenths of a degree. It would be 30.7 degrees to the left rather than 30 degrees to the left.

Q. If one placed this overlap over this end representing the dark area, this would represent the binocular obstructed area; is that correct?

A. That is correct.

Q. And the shaded areas to either side represent the binocular obstructed areas; is that correct?

A. That is correct.

Q. Now, if the DC-9 Captain were looking to the right of the 4.42 inch post, would he be able to see with both eyes any part of the seven-mile long contrail left by the Trident?

A. Not at that — until the one, one minute before.

Q. If he looks to the left of the post, would he be able to see with both eyes any part of the contrail at two minutes prior to the crash?

A. I am sorry. I don't think I understood your previous question.

Q. The previous question: If the Captain of the Inex-Adria DC-9 is looking to the right of the 4.42 inch post, would he be able to see with both eyes any part of the seven-mile contrail being left by the Trident?

A. No.

Mr. Green: Both as opposed to either?

Mr. Elstead: Both.

Q. Binocular, both eyes at the same time?

A. No.

Q. Would he be able to see any part of the seven-mile long contrail with one eye?

A. If he is looking to the right or left of the post.

Q. To the right of the post?

A. No.

Q. In what way would a pilot be able to see a seven-mile long contrail in this binocularly obstructed area?

A. By moving his head to one side or the other.

Q. When he moves his head to one side or the other, does he also have to move his eyes or make any shifting of the eyeballs while doing that?

A. Well, his eyes, as I said, are going to be fixating in a series of discrete fixations of about a third of a second each, and that would be going on.

Q. If he moves his head to the right and keeps his eyes following his head movement and looks straight ahead, will any — will the seven-mile long contrail in the binocular obstructed area appear in the area central vision or in the central phobia of the retina?

A. No. It would be in the periphery.

Q. What would the pilot have to do in order to see the seven-mile long contrail in the central phobia of both eyes?

A. He would have to move his head to one side or the other and then fixate near the post his eyes.

Q. Doctor, assuming the pilot looks to the left of the 4.42 inch post, will he be able to see with both eyes any or part of the seven-mile long contrail two minutes and 50 seconds prior to the crash?

A. No.

Q. Will he be able to see any part of the seven-mile long contrail with both eyes two minutes before?

A. No.

Q. At what point, is there some point at which the pilot would be able to see the seven-mile long contrail or some part of it with both eyes at the same time?

A. Oh, that is much later. You would have to go to the next chart for that.

Mr. Elstead This would be plaintiff's 84R.

Q. What is the difference between what is presented on 84-O and 84R?

A. They are exactly the same except this represents the final one minute before the crash.

Q. Calling your attention to the lines here, these again represent the seven-mile long contrail; is that correct?

A. That is correct.

Q. At what point does a part of the seven-mile long contrail begin to appear out of the binocularly obstructed area?

A. At just about one minute.

Q. And then what happens as the Trident gets closer to the DC-9? By "closer," I mean closer than 60 seconds away from collision.

A. More and more of the far or trailing ends of the contrail comes into monocular view to the left eye.

Q. I notice on this one, doctor, you have got some blue dots, some beginning small and getting larger and larger. What are those dots supposed to represent?

A. They represent the LUFT 360 flight of the Boeing 737, that was following the Trident by what was testified to be between ten and 14 miles. We have represented it as being at 12 miles, which is about halfway in between.

Q. Doctor, now, assuming that the DC-9 pilot had his eyes in the same approximate location of the monocular camera utilized for this photograph, and assuming he was looking to the right of the 4.42 inch post, would he, within the 60-minute period of time prior to the crash.

The Court: 60 minutes?

Mr. Elstead: 60 seconds.

Q. 60 second period to the time, prior to the crash be able to see any part of the Trident and its seven-mile long contrail with both eyes?

A. No.

Q. Would he be able to see any part of the Trident and its seven-mile long contrail with one eye if he is still looking to the right of the post?

A. To the right of the post, the Trident never appears until, until the final second. Perhaps not even at all.

Q. Let's assume that the pilot of the DC-9 is looking to the left of the post, at what point in time would all of the contrail, all of the seven-mile long contrail left by the Trident, appear to both eyes?

A. Not until just an instant before impact.

Q. At which point in time would a portion or all of the seven-mile long contrail appear to one of the eyes?

A. Well, a portion of it starts appearing to the left eye at about one minute before impact and that increases down to the point at which the far end of it finally becomes visible to the right eye as well.

Q. Now, doctor, I notice down at approximately 30 seconds, there is a tail end of a blue line that begins to appear out of the monocular obstructed area to the left of the binocular obstructed area —

A. That is not 30 seconds.

Q. Somewhere between?

A. Lift the cover.

Q. At ten seconds?

A. More like ten seconds.

Q. What does the appearance of that tail end of the line, representing the tail end of the seven-mile long contrail, represent appearing at ten seconds?

A. That represents the point at which it becomes visible to the right eye as well as the left.

Q. Ten seconds, assuming that the DC-9 Captain again has his eyes in the same approximate position of the binocular camera utilized for this photograph, is it ten seconds prior to the crash that a part of the seven-mile long contrail first becomes visible to both eyes?

A. Lift that and let me see. I think that is correct.

Q. (Lifting the chart.)

A. Yes. It is just about ten seconds.

Q. Now, doctor, if the captain of the DC-9 had himself situated in the seat of the aircraft so that he was forward of the point where the lenses in the binocular camera were located, what would that do with respect to the location of the seven-mile long contrail being left by the Trident?

A. Well, the front end of it would begin to come into view.

Q. It would begin to come into view to what, doctor?

A. To the right eye.

Q. The right eye.

How far, at 60 seconds here, you have it indicated that the beginning end of the contrail is not visible to both eyes. Can you give us an approximation as to how far forward of the binocular camera location the pilot would have to be

before the beginning of the contrail at 60 seconds prior to the impact, would become visible to the right eye?

A. Well, you have to move enough to shift it seven-tenths of a degree, just to get it to start to become visible.

Q. Can you give us an approximation of about how far forward of that point the pilot's eyes would have to be before that would occur?

A. I haven't computed that, but —

Mr. Green: I'll object, your Honor.

The Court: Sustained.

Mr. Elstead: Q. Can you give us an approximation of how far forward the captain would have to be before the beginning of the 7-mile long contrail would become visible to both eyes; can you tell us whether that would be a significant movement or are you able to make that computation?

A. I could make the computation, it's a significant movement —

The Court: You haven't made the computation?

The Witness: No, I haven't made that computation.

Mr. Green: Your Honor —

The Court: Sustained.

Mr. Elstead: Q. Your Honor, we have at this time a film we were going to show to the jury.

The Court: How long is it going to take to set it up?

Mr. Elstead: A good ten minutes to set it up and fifteen minutes to show.

The Court: How much more do you have of this witness after that?

## **Appendix G**

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**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA**

**No. C-77-2016-WWS**

**Richard Lee Browne, et al.,**

**Plaintiffs,**

**vs.**

**McDonnell Douglas Corporation,  
a corporation,**

**Defendant.**

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**No. C-77-2030-WWS**

**Alfred Peetz, et al.,**

**Plaintiffs,**

**vs.**

**McDonnell Douglas Corporation,  
a corporation,**

**Defendant.**

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**No. C-77-2031-WWS**

**Zeynep Buge Guner, et al.,**

**Plaintiffs,**

**vs.**

**McDonnell Douglas Corporation,  
a corporation,**

**Defendant.**

**G-3**

**No. C-78-0997-WWS**

**Alheid Leenderdse, et al.,**

**Plaintiffs,**

**vs.**

**McDonnell Douglas Corporation,  
a corporation,**

**Defendant.**

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**No. C-78-2935-WWS**

**Jeremy Nicholas Bowdler, et al.,**

**Plaintiffs,**

**vs.**

**McDonnell Douglas Corporation,  
a corporation,**

**Defendant.**

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**No. C-79-2804-WWD**

**Afet Hamamzi, individually, and Cemaliye Hamamzi  
by and through her Guardian ad Litem Mrs. H.  
Hamamzi, as heirs of Hilmi Hamamzi, deceased,  
Plaintiffs,**

**vs.**

**McDonnell Douglas Corporation,  
a corporation,**

**Defendant.**

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## PLAINTIFFS' AND DEFENDANT'S

### STIPULATION OF FACTS

The attorneys for the plaintiffs and for the defendant McDonnell Douglas Corporation stipulate and agree that the following statement of facts is a true statement of existent facts and that the Court should present the statement to the jury and instruct them that they must accept the statement of facts as evidence and regard the facts stated therein as being conclusively proved:

#### **I. The Flight of The DC-9 and The Trident 3 Aircraft.**

This action arises out of a midair collision between a DC-9 commercial jet airliner operated by the Yugoslav airline, Inex Adria Airways, and a Trident 3 commercial jet airliner operated by the English airline, British Airways, which occurred on September 10, 1976, at approximately 33,000 feet near Zagreb, Yugoslavia. All passengers and crew members on board both aircraft were killed in the collision.

The collision occurred in the morning within 1 second after 10:14 and 42 seconds Greenwich Mean Time (Greenwich Mean Time or GMT is converted to local time in Yugoslavia by adding 1 hour to whatever the GMT is). The weather at the time and place of the collision was clear. The sun at the time of the collision was at an angle of 48 degrees elevation in relation to the earth's horizon and, in relation to the point in the sky where the collision occurred, was at an angle of 166-169 degrees in azimuth.

The Trident 3 was on a scheduled flight from London, England to Istanbul, Turkey, and was carrying 54 passengers and a crew of 9. It left London at 08:32 A.M. GMT. The flight, after takeoff, climbed steadily until reaching the assigned altitude of 33,000 feet over the western part of

## G-5

Holland. It continued to fly at 33,000 feet and travelled southeasterly across Europe and then along Airway UB5 over Yugoslavia until the collision. It was flying level at 33,000 feet for more than an hour before the collision.

Prior to the collision, the Trident 3 was leaving a contrail behind it that was approximately 7 miles long and was flying at an airspeed of 479 knots true airspeed (this is the same as 551 statute miles per hour). A contrail is a white streak of condensed water vapor created in the air by an airplane flying at a high altitude. After flying over the Klagenfurt VOR and crossing the Yugoslav border, the Trident 3 was flying towards the Zagreb VOR on a magnetic heading of 120-122 degrees. Two minutes and 50 seconds before the collision, its magnetic heading changed to 115 degrees and then, 5 seconds before the collision, it changed to 116 degrees, the magnetic heading of the Trident 3 at impact.

The DC-9 was on a scheduled flight from Split, Yugoslavia to Cologne, Germany, and was carrying 108 passengers and a crew of 5. It took off from Split at 09:48 A.M. GMT and travelled almost due north from takeoff until the time of the collision. The DC-9 climbed steadily after takeoff to 26,000 feet and then flew level at 26,000 feet for 1 minute and 48 seconds, at which time it was cleared to and began a climb to 35,000 feet.

After takeoff from Split and turning on course, the DC-9 maintained a magnetic heading of 359 degrees until flying over the Kostanjnica NDB. At that time, its magnetic heading was changed to 353 degrees, its magnetic heading at impact. At the moment of the collision and for several minutes prior to it, the DC-9 was flying at an airspeed of 430 knots true airspeed (this is the same as 495 statute miles per hour).

## G-6

At impact, the angle from the centerline of the DC-9 to the Trident 3 was 30-31 degrees and the angle from the centerline of the Trident 3 to the DC-9 was approximately 27 degrees.

### **II. The Flight Crews of the DC-9 and the Trident 3 Aircraft.**

The crews of both aircraft were properly certificated and qualified for the performance of their duties. They were also medically qualified and fit, rested, and fully trained in the respective types of aircraft they were flying.

The Captain of the Trident 3 was Dennis Tann who was 44 years old and had been a pilot with British Airways since 1957. He held an Airline Transport Pilot's license and had 10,781 hours of total flight time, 400 of which were in a Trident. The First Officer and copilot of the Trident 3 was Brian Helm who was 29 years old and had been a pilot with British Airways since 1969. He held an Airline Transport Pilot's license and had 3,655 hours of total flight time, 1,593 of which were in a Trident. The other crew members on board the Trident 3 consisted of an acting First Officer, 2 stewards, and 4 stewardesses.

The Captain of the DC-9 was Anton Krumpak who was 51 years old and had been a pilot with Inex Adria Airways since 1962. He held an Airline Transport Pilot's license and had 10,157 hours of total flight time, 3,250 of which were in a DC-9. The First Officer and copilot of the DC-9 was Branko Ivanus who was 29 years old and had been a pilot with Inex Adria Airways since 1967. He held an Airline Transport Pilot's license and had 2,951 hours of total flight time, 1,583 of which were in a DC-9. The other crew members on board the DC-9 consisted of 3 stewardesses.

### **III. The Air Traffic Control Services that were provided for the DC-9 and the Trident 3.**

All airline flights are conducted under visual flight rules (VFR) or under instrument flight rules (IFR). VFR flight is conducted clear of clouds without any requirement for assistance from the air traffic control system. IFR flight is conducted and required when flying above approximately 20,000 feet, when flying in any airway over Europe, or when flying through clouds. Flights in European airways are flights in what is called controlled airspace, meaning that they are controlled by air traffic controllers on the ground. By definition, all flights above approximately 20,000 feet are conducted in controlled airspace.

For IFR flights, the captain of an aircraft must file a flight plan with the appropriate air traffic control facility and receive from that facility a "clearance" for a specified route of flight, including parameters for altitude and time.

The Captain of the DC-9 and the Captain of the Trident 3 each filed an instrument flight plan prior to takeoff and, consequently, each aircraft was flown according to instrument flight rules throughout its flight. Under these rules, the pilots of each aircraft were required to fly the routes specified in their flight plans, to maintain two-way radio communication with air traffic controllers on the ground throughout their flights, and to maintain a visual look-out for other aircraft whenever flying in clear weather or visual meteorological conditions. Each flight was also required to fly the altitude assigned by the air traffic controllers and to make periodic position reports to the air traffic controllers to let them know the time that it flew over each geographical point specified in its flight plan and to give them an estimate of the time that it expected to fly over the next succeeding geographical point. The only deviations

## G-8

permitted from the flight plan route or from the assigned altitude would have been those approved beforehand by an air traffic controller or made necessary without such prior approval by an emergency situation.

At the time of the collision, both aircraft were in radio communication with the "upper sector" air traffic controller at Zagreb air traffic control center in Zagreb, Yugoslavia. This controller was responsible for giving air traffic control services to all aircraft flying at the altitudes of 31,000 feet and above. He communicated with these aircraft on radio frequency 134.45 megahertz (Mhz). A "middle sector" controller was responsible for giving air traffic control services to all aircraft flying at the altitudes between 24,000 feet and 29,000 feet. He communicated with these aircraft on radio frequency 135.8 Mhz. A "lower sector" controller was responsible for giving air traffic control services to all aircraft flying at the altitudes between 900 feet and 24,000 feet. He communicated with these aircraft on radio frequency 124.6 Mhz. The altitudes between 29,000 feet and 31,000 feet were a buffer zone in which no aircraft were permitted to fly except while climbing or descending to higher or lower altitudes.

These three sector controllers reflected the fact that the airspace controlled by Zagreb air traffic control center was divided into three sectors, a lower sector from 900 feet to 24,000 feet, a middle sector from 24,000 feet to 29,000 feet, and an upper sector from 31,000 feet and above. On the day of the collision, each of these sectors was supposed to be manned by three people but because of staff shortages there were only two controllers working each sector, a controller and an assistant controller who rotated positions on a periodic basis. The controller maintained radio contact with the aircraft in his sector and was primarily responsible for offering air traffic control services to those aircraft.

## G-9

The assistant controller maintained contact with the assistant controllers from other sectors and was primarily responsible for coordinating the transfer or "hand-off" of aircraft between his particular sector and the other sectors.

At the time of the collision, the upper sector was being controlled by just one controller and this controller was providing services for several other aircraft. This controller, as were the other controllers at Zagreb air traffic control center, was utilizing two forms of air traffic control: procedural and radar, although the radar form of control had not been fully approved and was still being used on a trial basis.

Procedural control consists of the controller providing air traffic control services to aircraft according to the reports he receives from the aircraft which tell him where the aircraft are at certain times. When utilizing this type of control without the assistance of radar, the controller is required to keep track of the aircraft in his sector and to issue any course instructions as necessary to prevent any of the aircraft from flying over the same point and at the same altitude within 10 minutes of each other.

Radar control consists of the controller providing air traffic control services to aircraft according to where a radar screen in front of him tells him they are. When utilizing this type of control, the controller is only required to ensure a safe separation between aircraft in his sector even though the separation results in aircraft flying over the same point and at the same altitude within 10 minutes of each other.

The Trident 3 (call-sign Beeline or BE 476) first made radio contact with Zagreb air traffic control center when it crossed the Yugoslav border at Klagenfurt, Austria, and was transferred by an Austrian air traffic controller to the



## G-10

Zagreb "upper sector" air traffic controller at 10:04 and 12 seconds GMT. The Trident 3 advised the "upper sector" controller that it was over the Klagenfurth VOR at 10:02 GMT and that it was estimating that it would be over the Zagreb VOR at 10:14 GMT. The controller then told the Trident 3 crew to "call me passing Zagreb," to maintain the altitude of 33,000 feet, and to "squawk alpha 2312" — meaning that they were not required to call again until they were over the Zagreb VOR. There was no further radio communication between the Trident 3 crew and the "upper sector" controller.

The DC-9 (call-sign Adria or JP 550) first made contact with Zagreb air traffic control center approximately 7 minutes after its takeoff from Split, Yugoslavia. At that time, 09:54 and 49 seconds GMT, the DC-9 crew checked in with the Zagreb "lower sector" controller who, at 09:56 GMT, cleared it to climb to and level off at 26,000 feet. As the DC-9 reported passing through 22,000 feet at 10:02 and 44 seconds GMT, the "lower sector" controller transferred the DC-9 to the "middle sector" air traffic controller. The DC-9 switched to the "middle sector" radio frequency of 135.8 Mhz and, at 10:13 and 21 seconds GMT, advised the "middle sector" controller that it was passing through 22,500 feet on its way to 26,000 feet.

The DC-9 continued to climb to 26,000 feet and, at 10:05 and 56 seconds GMT, the copilot of the DC-9 advised the "middle sector" controller that it was leveling at 26,000 feet and that it was standing by for a higher altitude. The DC-9 continued to fly level at 26,000 feet for 1 minute and 44 seconds until 10:07 and 40 seconds GMT, at which time the "middle sector" controller cleared the DC-9 to leave 26,000 feet and climb to 35,000 feet.

At 10:12 and 3 seconds GMT, the copilot of the DC-9 advised the "middle sector" controller that it had just

passed through 31,000 feet and 7 seconds later, at 10:12 and 10 seconds GMT, the "middle sector" controller instructed the DC-9 to "Squawk standby" on its transponder and to switch to the "upper sector" controller's radio frequency of 134.45 Mhz. A transponder is an instrument in the aircraft which sends a signal to the radar set of the air traffic controller and which causes the altitude of the aircraft and the code that it is squawking to be displayed on the radar set adjacent to the return on the set created by the aircraft itself. When the transponder is in the "standby" mode, the radar set does not receive and display the code and altitude of the aircraft.

At the time the "middle sector" controller instructed the DC-9 to switch to the "upper sector," the "upper sector" controller was busy talking to three other aircraft. Contact with the DC-9 was not made until 10:14 and 4 seconds GMT. Beginning at that time and up until the collision, the following transmissions between the DC-9 and the "upper sector" controller took place:

1014 + 04 (DC-9):	"Hello Zagreb Adria 550"
1014 + 09 (Controller):	"Adria 550 Zagreb good afternoon go ahead"
1014 + 12 (DC-9):	"325-crossing Zagreb at 14"
1014 + 16 (Controller):	"Roger what is your present level"
1014 + 18 (DC-9):	"327"
1014 + 23 (Controller):	"Maintain for the moment that level and report passing Zagreb" (this instruction was issued in the Serbocroatian language)

## G-12

- 1014 + 28 (DC-9): "On which level"
- 1014 + 30 (Controller): "On the level you are now climbing because you have an aircraft in front of you [unintelligible word] 335 from left to right"
- 1014 + 39 (42) (DC-9): "Ok we remain on exactly 330"

In the last few seconds prior to the collision, both the pilot and the copilot were utilizing the radio.

Within 1 second after this last transmission from the DC-9 ended at 10:14 and 42 seconds GMT, the collision occurred. There were no attempts made by the pilots of the DC-9 or of the Trident 3 to avoid each other's aircraft.

Written transcripts of the transmission between the Zagreb air traffic controllers and the aircraft they were providing air traffic control services for are attached to and are a part of this statement of proven facts.

### IV. The Design and Manufacture of the DC-9.

The DC-9 was a series 32 DC-9 aircraft which was designed and manufactured by the McDonnell Douglas Corporation in Long Beach, California. It was sold and delivered to Inex Adria Airways by the McDonnell Douglas Corporation in March 1976.

The DC-9 had two identical windshield posts separating the pilot's and copilot's windshields from the pilot's and copilot's clearview windshields. Measured from the pilot's and copilot's eye reference positions, these two posts measured 4.42 inches in projected width.

The DC-9 also had two identical windshield posts separating the center windshield from the pilot's and copilot's windshields. Measured from the copilot's eye reference position, the windshield post separating the center windshield from the pilot's windshield measured 3.23 inches in project width. Measured from the pilot's eye reference position, this post measured 2.46 inches in projected width.

**V. The Design and Manufacture of the Trident 3.**

The Trident 3 was a series 101 Trident 3B aircraft which was designed and manufactured by Hawker-Siddley Aviation, Ltd., in England. It was owned and operated at the time of the collision by British Airways.

So Stipulated and Agreed,

DATED: 26 May 1981

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